SEC Analysis of Xanthan

Application Note

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Introduction

Xanthans are high molecular weight polymers that have the ability to raise the viscosity of water dramatically. This is exploited in oil recovery processes, where xanthan acts as a water thickener. Analysis by SEC is possible at very low sample concentrations, however, to produce significant detector response, an increased injection volume is required. The sample was analyzed using Agilent PL aquagel-OH 60 15 µm columns, which were employed in order to avoid on-column shear degradation of these high molecular weight samples, and cover a molecular weight range from 10^5 to 10^7.

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Conditions

Sample: Xanthan
Columns: 2 x PL aquagel-OH 60 15 µm, 300 x 7.5 mm (p/n PL1149-6260)
Eluent: 0.2 M $NaNO_3$ + 0.01 M NaH_2PO_4 at pH 7
Flow Rate: 1.0 mL/min
Detection: RI

Conclusion

SEC using PL aquagel-OH 60 15 µm columns successfully analyzed a sample of xanthan at a very low concentration. Aqueous SEC with PL aquagel-OH columns provides information not only on the molecular weight of the polymer but also on the polydispersity and the shape of the molecular weight distribution. The excellent chemical and mechanical stability of these columns offer high performance with good repeatability and column lifetime.

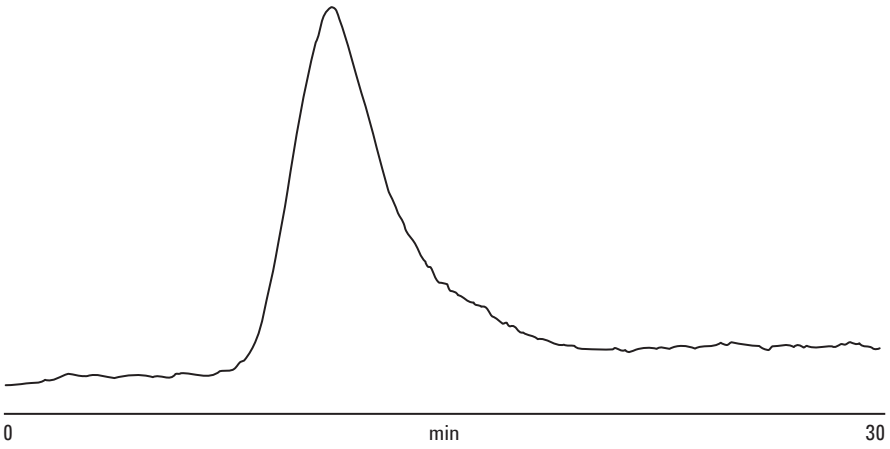

Figure 1. Raw data chromatogram of xanthan

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